FITILEVA, Lyudmila Mikhaylovna, terapevt-klinitsist; BOGOSLOVSKIY, V.A., red.; KUZ'MINA, N.S., tekhn. red.

[Short manual on phonocardiology] Kratkoe rukovodstvo po fonokardiografii. Moskva, Medgiz, 1962. 127 p. ___ [Phonorecord "Acquired heart defects" (side 1). "Congenital heart defects" (side 2)] Grammofonnaia plastinka "Priobretennye poroki serdtsa" (1 storona). Vrozhdennye poroki serdtsa" (2 storona)

(MIRA 15:5)

(HEART—SOUNDS)

VAYSBEYN, Sof'ya Grigor'yevna; BOGOSLOVSKIY, V.A., red.; SENCHILO, K.K., tekhn. red.

[Emergency states in the clinical treatment of internal diseases]Neotlozhnye sostoianiia v klinike vnutrennikh boleznei; diagnostika i terapiia. Izd.3., perer.i dop. Moskva, Medgiz, 1962. 376 p. (MIRA 15:9)
(MEDICINE, INTERNAL) (MEDICAL EMERGENCIES)

BOGOSLOVSKIY, V.A.

Conference of Public Health Ministers of the Countries of the Socialist Camp devoted to problems in the control of cardiovascular diseases. Kardiologiia 1 no.2:86-88 Mr-Ap '61. (MIRA 15:1)
(CARDIOVASCULAR SYSTEM--DISEASES)

KURSHAKOV, Nikolay Aleksandrovich; BOGOSLOVSKIY, V.A., red.; PETROVA, N.K., tekhn. red.

[Allergic diseases of the peripheral vessels]Allergicheskie zabolevaniia perifericheskikh sosudov. Moskva, Medgiz, 1962. 111 p. (MIRA 15:11)
(ALLERGY) (BLOOD VESSELS--DISEASES)

DUHYAGO, T.B.; BOGOSLOVSKIY, V.A., kand. arkhit., nauchn. red.; VORONETSKAYA, L.V., red.izd-va; ROZOV, L.K., tekhn. red.

[Standard Russian orchards, parks] Russkie reguliarnye sady i parki. Leningrad, Gos.izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1963. 340 p. (MIRA 16:12)
(Parks) (Landscape architecture)

KALYUZHNAYA, Rakhil' Aronovna, BOGOSLAVSKIY, V.A., red.

[Chronic intoxications in childhood; pathogenesis, clinical aspects and treatment] Khronicheskie intoksikatsii detskogo vozrasta; patogenez, klinika, lechenie. Moskva, Meditsina, 1965. 346 p. (MIRA 18:10)

Bogoslovskiy V.A.

ASHPIZ, S.I., insh.; BOGOSLOVSKIY, V.A., insh.

Incorrect tables ("Tables for calculating slope surfaces and the volume of embankments and cuts of industrial automobile roads." Reviewed by S.I. Ashpiz, V.A. Bogoslovskii). Avt. dor. 21 no.4: 31-32 Ap '58. (MIRA 11:4)

(Road construction)

BOGOSLOVSKIY, V.A., inzhener.

Study work practices of large mechanized quarries. Mekh.trud.rab. 11 no.5:47 My '57. (MIRA 10:7)
(Quarries and quarrying)

BOGOSLOVSKIY, Vyacheslav Aleksandrovich, inzh.; PERSHIN, Sergey Petrovich, inzh.; RAK, S.M., kand.tekhn.nauk, red.; KHITROV, P.A., tekhn.red.
[Rubble and gravel plants in the railroad transportation system] Shchebenochnye i graviinye zavody na zheleznodorozhnom transporte. Moskva, Gos.transp.zhel-dor. izd-vo, 1958. 326 p. (MIRA 11:12)
(Sand and gravel plants)

GOR'KOV, Aleksandr Vasil'yevich; BOGOSLOVSKIY, V.A., inzh., red.; MIKHAYLENKO, Yu.Ya., red.; LEBEDEVA, L.V., tekhn.red.

[Organization of storage and transportation of nonmetallic materials at construction sites of large hydroelectric power installations] Organizatsiia transporta i skladov nerudnykh materialov na stroitel'stvakh krupnykh gidrouzlov. Moskva, Orgenergostroi, 1959. 62 p. (MIRA 12:10)
(Hydroelectric power stations)

BORISOV, M.; BOGOSLOVSKIY, V. A.

The best builders. Stroitel' no.9:12 S '59. (MIRA 13:3)

1. Starshiy inshener tresta Ryazan'shilstroy (for Bogoslovskiy).
(Construction workers)

RAT'KOVSKIY, Leonid Petrovich; BOGOSLOVSKIY, V.A., inzh., retsenzent, nauchnyy red.; GOR'KOV, A.V., inzh., retsenzent; BUSHUYEVA, M.A., red.izd-va; RUDAKOVA, N.I., tekhn.red.

[Producing concrete aggregates using rock products] Proizvodstvo nerudnykh materialov - zapolnitelei dlia betona. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1960. 203 p. (MIRA 13:5)
(Aggregates (Building materials)) (Quarries and quarrying) (Sand and gravel plants)

BOGOSLOVSKIY, V.A., inzh.; BARYSHEV, Ye.I., inzh.

Mobile crushing and grading plant with a yearly output of 200 thousand cu. meters of gravel. Stroi. mat. 6 no.10:15-18 O '60. (MIRA 13:10)

(Sand and gravel plants)

SUKHOTSKIY, S.F., inzh., nauchnyy red.; BOGOSLOVSKIY, V.A., inzh., nauchnyy red.; KOSYAKINA, Z.K., red.izd-va; NAUMOVA, G.D., tekhn. red.

[Overall mechanization and automation in extracting and processing nonmetallic mineral building materials] Kompleksnaia mekhanizatsiia i avtomatizatsiia dobychi i pererabotki nerudnykh stroitel'nykh materialov. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 162 p. (MIRA 14:5)

1. Nauchno-tekhnicheskoye obshchestvo stroitel'noy industrii SSSR.
(Sand and gravel industry) (Stone industry)
(Automatic control)

BOGOSZLOVSZKIJ, V. [Bogoslovskiy, V.] docens, muszaki tudomanyok kandidatusa

"Theoretical bases of the physics of the construction industry" by A.V.Likov. Reviewed by V.Bogoslovskiy. Epuletgepeszet 11 no.1: 7 F '62.

BUSALOV, Alekseĭ Andreyevich; DAMIR, Alim Matveyevich; BOGOSLOVSKIY, V.A., red.; PRONINA, N.D., tekhn. red.

[Mitral stenosis from the viewpoint of the therapeutist and the surgeon]Mitral'nyi stenoz v osveshchenii terapevta i khirurga. Moskva, Medgiz, 1962. 322 p. (MIRA 16:1)
(MITRAL VALVE—DISEASES)

RAMZES, B.Ya.; NISNEVICH, M.L.; GALAKTIONOV, V.I., inzh., retsenzent; BOGOSLOVSKIY, V.A., inzh., nauchn. red.; KOMAROVSKAYA, L.A., tekhn. red.

[Quality control of crushed stone, gravel, and sand for building work] Kontrol' kachestva shchebnia, graviia i peska dlia stroitel'nykh rabot. Moskva, Gosstroiizdat, 1963. 191 p. (MIRA 16:7)

(Sand and gravel industry--Quality control)
(Stone, Crushed)

NISNEVICH, Mark L'vovich; RAT'KOVSKIY, Leonid Petrovich; KLASSEN, V.I., prof., doktor tekhn. nauk, retsenzent; KHOLIN, N.D., prof., retsenzent; RODIN, R.A., kand. tekhn. nauk, retsenzent; BOGOSLOVSKIY, V.A., inzh., retsenzent; IVANOV, I.K., inzh., retsenzent; TROITSKIY, A.V., inzh., nauchnyy red.; MIKHAYLOV, B.V., kand. tekhn. nauk, nauchn. red.; GOMOZOVA, N.A., red.izd-va; SHERSTNEVA, N.V., tekhn. red.

[Dressing nonmetallic building materials] Obogashchenie nerudnykh stroitel'nykh materialov. Moskva, Gosstroiizdat, 1963. 282 p. (MIRA 17:2)

L 31979-66 EWT(m)/EWP(j) IJP(c) RM

ACC NR: AR6011879 SOURCE CODE: UR/0081/65/000/016/S074/S074

AUTHOR: Bogoslovskiy, V. D.

TITLE: Effect of organic sulfides on polychloroprene vulcanization

SOURCE: Ref. zh. Khimiya, Abs. 16S553

REF SOURCE: Tr. Tomskogo un-ta, v. 170, 1964, 86-99

TOPIC TAGS: polychloroprene, sulfide, vulcanization, organic sulfide

ABSTRACT: Thiuram disulfide, zinc dimethyldithiocarbamate and xanthogene disulfide retard polychloroprene vulcanization as compared to vulcanization with metal oxides. Diphenylguanidine and S, as carbamates and xanthogenates of alkali metals speed up vulcanization. L. Ginsburg. [Translation of abstract] [NT]

SUB CODE: 11,07/SUBM DATE: none

Card 1/1

S/076/60/034/009/007/022
B015/B056

AUTHORS: Stromberg, A. G. and Bogoslovskiy, V. D.

TITLE: Polarographic Study of Organic Redox Systems. The System Altax - Captax

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 9, pp. 1947-1951

TEXT: The irreversible anode-cathode wave in the organic redox system Altax - Captax was experimentally investigated, and a theoretical clarification of the mechanism of the electrode process is given. The experiments were carried out on a polarograph of the UFAN (Ref. 4), the current being measured with an M 25/2 (M25/2) mirror galvanometer. The polarogram of the solution of $1 \cdot 10^{-3}$ M Altax [+], $2 \cdot 10^{-3}$ M Captax [++], 0.26 M $NaC_2H_3O_2$, and 0.25 M $HC_2H_3O_2$ in a 75% ethanol - water mixture has an anode-cathode wave, which indicates the irreversibility of the process. It is assumed that the Captax molecules are associated in the form of double molecules in the solution, the Captax dimer being formed by a hydrogen bond between the hydrogen and sulfur atoms. The electrode reaction

Polarographic Study of Organic Redox Systems. The System Altax - Captax

S/076/60/034/009/007/022
B015/B056

$RSSR + 2H^+ + 2e \rightleftharpoons (RSH)_2$ (1) (R = C_7H_5NS) is regarded as a limiting stage. A new method of determining the equilibrium redox potential in highly irreversible organic redox systems is suggested by using the equation: $\varphi_{1/2\ rev.} = \alpha\varphi_{1/2,k} + \beta\varphi_{1/2,a}$ (5) (α and β = discharge- and ionization coefficients, $\varphi_{1/2,k}$ and $\varphi_{1/2,a}$ = cathode and anode potentials of the semiwave). The exchange current of the investigated system was calculated and is given. As the theoretical statements agree well with the experimental data if reaction (1) is assumed, the major part of the Captax molecules in the solution probably exists as the afore-mentioned double molecules. However, the formation of RS^* radicals as intermediate products ($RSSR \rightleftharpoons 2RS^*$) is not impossible if $RS^* + H^+ + e \rightleftharpoons RSH$ associate to $RSH + RSH \rightleftharpoons (RSH)_2$. There are 1 figure and 6 Soviet references.

ASSOCIATION: Tomskiy politekhnicheskiy institut (Tomsk Polytechnic Institute)

SUBMITTED: December 3, 1958

Card 2/2

BOGOSLOVSKIY, V. N.

Bogoslovskiy, V. N. - "Economic thickness of thermoinsulation of industrial furnaces under changing (quasistationary) operating conditions", Sbornik trudov Studench. nauch.-tekhn. o-va (Mosk. inzh.-stroit. in-t im. Kuybysheva), Moscow, 1949, p. 49-62.

SO: U-411, 17 July 53, (Letopis 'Zhurnal 'nykh Statey, No. 20, 1949).

BOGOSLOVSKIY, V. N.

Bogoslovskiy, V. N.

"Investigation of the Temperature-Moisture Conditions of the External Walls of Buildings Using the Method of Hydraulic Analogies." Min Higher Education USSR. Moscow Order of Labor Red Banner Construction Engineering Inst imeni V. V. Kuybyshev. Moscow, 1955. (Dissertation for the Degree of Candidate in Technical Sciences).

SO: Knizhnaya Letopis', No. 27, 2 July 1955

BOGOSLOVSKIY, V.N.; IL'ICHEV, A.S.; SERBINOVICH, P.P.

"Planning walls and roofs of buildings by taking into consideration physical and climatic influences." V.M.Il'inskii. Reviewed by V.N.Bogoslovskii and others. Stroi.prom. 34 no.11:50-51 N '56. (MLRA 9:12)
(Building) (Il'inskii, V.M.)

SEMENOV, L.A., prof., doktor tekhn.nauk; BOGOSLOVSKIY, V.N., kand.tekhn. nauk, nauchnyy red.; NINEMYAGI, D.K., red.izd-va; TEMKINA, Ye.L., tekhn.red.

[Stove heating] Pechnoe otoplenie. Izd.2., perer. i dop. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1960. 194 p. (MIRA 13:4)

(Stoves)

BOGOSLOVSKIY, V.N.

2

S/133/60/000/011/002/023
A054/A029

AUTHORS: Chukin, V.V., Candidate of Technical Sciences, Miller V.Ya., Professor, Toporkov, S.D., Candidate of Technical Sciences, Karelin, V.G. Engineer, Bogoslovskiy, V.N., Engineer, Leont'yev, L.I., Engineer

TITLE: Fluidized Magnetic Conversion of the Lisakovsk Iron Ores

PERIODICAL: Stal', 1960, No. 11, pp 965-971

TEXT: The magnetic roasting of Lisakovsk iron ore was investigated by the UFAN Institute of Metallurgy and by the Uralmekhanobr in cooperation with the Vsesoyuznyy nauchno-issledovatelskiy institut metallurgicheskoy teplotekhniki (All-Union Scientific Research Institute of Metallurgical Heat Technique. The kinetics of roasting were examined on a laboratory scale (in the UFAN by L.I. Leont'yev under the supervision of Professor V.Ya. Miller), the aero- and hydrodynamics of the fluidized bed were investigated in a transparent model while experiments were also carried out in a roasting furnace on a semi-industrial scale. The iron ore tested consisted of 35-37% Fe, 0.23% FeO, 26-28% SiO_2, 10-13% hydrate water and 8-10% hygroscopic water; the 0-2 mm fraction in this ore amounted to 80%. In the laboratory equipment (a vertical, tubular

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resistance furnace and a ceramic reaction tube, 20 mm in diameter) 25 g of the iron ore (1-3 mm fraction) was calcinated. The sample was heated up to 700°C by flue gases having a composition which corresponds to that of the actual operation. Next the sample was crushed to 0-0.25 mm size and enriched in a humid magnetic analyzer, in which the intensity of the magnetic field was 900 oersted. Extraction of iron was most intensive (up to 92%) when increasing the $(Co+H_2)$ content in the gas to 2.5%; however, at such a high degree of extraction the rate of reduction of iron oxide to magnetite amounted to only 50%. Maximum extraction can be obtained when the quantity of reduction agents in the gas amounts to 3.7% (61.5% iron). Since there were 3.7% reducing agents in the gas, the optimum enriching results were obtained after calcination at 800°C, while the magnetizability of the ore suddenly increases when reducing the roasting temperature to 700°C. Tests were also carried out with various fractions (1-7 mm) and at various temperatures. When roasting in a neutral medium (purified nitrogen) at about 800°C the magnetizability of the ore increased considerably: the concentrate contained more than 59% Fe and also about 7.5% bivalent FeO. In order to establish the nature of the magnetic phases, X-ray structural analyses were carried out on crude and calcinated ores in nitrogen

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gas at 800°C and it was found that the high degree of magnetization was due to the formation of unbalanced magnetic ferrum-oxides with distorted crystal lattices in the decomposition process of hydrogoethite upon rapid heating, but also due to the accelerated reduction processes during the transformation of crystal lattices of ferro-hydroxides. The tests and calculations suggested that the speed of magnetic roasting is not so much limited by the fact that crystal-chemical transformations take place, but rather more by the dehydration rate of the ore, i.e., by the heating rate of its particles. The aero-hydrodynamics of the fluidized bed were tested on a transparent model, the main parts of which are a chamber, a worm-type feeder, a cyclone and a bunker. The effect of the air velocity in the chamber on the fluidized bed was examined and it was found that the specific resistance of the fluidized bed decreases with the height of the bed and also with the increase of the average air velocity due to the increasing porosity of the bed. The field of concentration, the granulometric structure of the dust within the chamber, the time during which the dust stayed in the chamber were also examined. In the roasting furnace tests were carried out according to four schemes (with reducing agents in the gas from 0.85 to 4.5% and by feeding ore in amounts of 85 to 145 kg/h). It was found that when applying di-

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viding walls in the heated bed, the distribution of particles during their stay in the chamber improved considerably, and that the chambers with rectangular cross sections were more suitable than those with circular cross sections. The best enriching results were obtained by crushing the calcinated ores to 0 - 0.2 mm and by recovering the free oölites (mainly 0.1 - 0.2 mm in size). At such a degree of crushing the concentrate contained 58.04 - 58.44% Fe, the yield in calcinate ore was 67.89 - 65.79%, while the quantity of extracted iron amounted to 98.15 - 97.22%. There are 9 figures and 2 tables.

ASSOCIATION: VNIIMT, Uralmekhanobr, institut metallurgii UFAN (UFAN Metallur-

S/076/60/034/012/007/027
B020/B067

AUTHORS: Zhuravleva, M. G., Bogoslovskiy, V. N., and Chufarov, G. I.

TITLE: Effect of Additions of Potassium and Sodium Carbonate on the Reduction of Oxides and Ferrites of Nickel and Cobalt by Graphite

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 12, pp. 2704-2708

TEXT: Nickelous oxide was obtained by decomposing nickel nitrate at 1100°C on air while cobalt oxide was obtained by thermal dissociation of Co_3O_4 at 950° in nitrogen atmosphere. The corresponding ferrites were prepared by a 30-hour annealing of the oxides in a mixture with iron oxide at 1200°C. Acheson graphite which had been annealed at 1100° in vacuo was used as oxidizing agent. Sodium and potassium carbonate were taken in quantities of 1 wt% of the oxide or ferrite, and graphite was taken in a quantity which was three times higher than the amount necessary for the reduction to the metal. The weighed portion was 0.5g of the mixture.

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Effect of Additions of Potassium and Sodium Carbonate on the Reduction of Oxides and Ferrites of Nickel and Cobalt by Graphite

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B020/B067

The reduction of nickelous oxide with graphite at 700°C is delayed as soon as a yield of 50% is attained. In the presence of 1% K_2CO_3 or Na_2CO_3 the reduction is accelerated and completed. The accelerating effect of potassium and sodium is almost the same. Cobaltous oxide is reduced at higher temperatures than nickelous oxide, and the kinetic curves have no maximum (Fig. 2). The addition of K_2CO_3 or Na_2CO_3 increases the reduction rate at 800° by many times. In this case the effect of K_2CO_3 is stronger than that of Na_2CO_3. Also the reduction of nickel ferrite is accelerated by adding the above-mentioned salts. In this case the initial reaction temperature is also reduced (Fig. 3). The accelerating effect of potassium carbonate is higher than that of sodium carbonate. Also the reduction of cobalt ferrite is considerably accelerated by adding the salts. The reduction of nickel ferrite without addition proceeds under the formation of metallic nickel whose lattice parameters gradually increase. During the reduction between 35 and 50% the lattice parameters of the solid solution Ni - Fe do not change. The results of the X-ray structural analysis of

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Effect of Additions of Potassium and Sodium Carbonate on the Reduction of Oxides and Ferrites of Nickel and Cobalt by Graphite

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the reduction products of nickel ferrite show that the phase with spinel lattice, i.e., ferrite, is present in all reaction stages to almost 70%. The phase with NaCl lattice, which in this case corresponds to wüstite or the solid solution of Fe(Ni)O, was first observed in small quantities with a 51% reduction, while it predominates with a 71% reduction. The metallic phase which is formed in the reduction of nickel ferrite with additions is a solid solution of iron in nickel. The change of the lattice parameters of this phase is shown. The phase composition of the solid reduction products and the parameters of the metallic phase indicate that in the reduction of nickel ferrite with additions the number of the Fe-ions which pass into the metallic phase is higher than in the reduction without additions. There are 5 figures and 8 references: 7 Soviet and 1 US.

ASSOCIATION: Ural'skiy filial AN SSSR, In-t metallurgii (Ural Branch of the AS USSR, Institute of Metallurgy)

SUBMITTED: March 10, 1959

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BOGOSLOVSKIY, V.N.

[illegible] ex[illegible] [illegible] with [illegible] panel-type radiant heating systems. [illegible] no.[illegible]:[illegible]-10 [illegible] '61. ([illegible] 14:[illegible])
([illegible] heating)

S/020/61/139/005/012/021
B103/B217

AUTHORS: Bogoslovskiy, V. N., Stafeyeva, N. M., and Chufarov, G. I., Corresponding Member AS USSR

TITLE: Reduction of copper ferrite $CuFeO_2$ by graphite

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 5, 1961, 1105-1106

TEXT: The authors studied, by means of graphite, the reduction kinetics of ferrite of monovalent copper, $Cu^{1+}Fe^{3+}O_2^{2-}$, of rhombohedral structure, and the crystallochemical transformations occurring. The ferrite was produced by sintering a mixture of stoichiometric composition $Cu_2O + Fe_2O_3$ during 28 hr at 1000°C in a CO_2 current. The specimens obtained were monophase (stated by x-ray diffraction). Reduction by graphite was conducted in vacuum of approximately 10^{-2} mm Hg. Methods have been described in detail (Fiz. met. i metalloved., 8, 740 (1959)). Experimental results at 900, 950, 1000, and 1050°C are given in Fig. 1. It is concluded that copper ferrite is reduced gradually. The process stops with 25% reduction at 900°C. Reduction

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Reduction of copper ferrite $CuFeO_2$ ...

is more intensive at higher temperatures. First, the reaction is retarded (up to 50% reduction), then, however, accelerated. CO_2 and CO are the gaseous reaction products. Only CO_2 forms up to 33% reduction, from 50% reduction the ratio $CO : CO_2 = 1 : 1$. The CO_2 quantity gradually decreases with further reduction. The stepwise character of this reduction is confirmed by x-ray diffraction pattern in the solid phases at different reduction degrees. Copper and magnetite (the latter gives a spinel diffraction pattern) are detected besides initial ferrite in an early stage of reduction. Initial ferrite vanishes in 30% reduction whereas wüstite appears at 40%. Autocatalytic wüstite reduction begins after removal of 50% oxygen; copper, wüstite, and iron are detected in the solid reaction products. $CuFeO_2$ does not form solid solutions with magnetite. This was confirmed by the dependence of the oxygen equilibrium tension in the gaseous phase on the reduction degree. The exact results of this study are to be published later. It is the authors' opinion that no remarkable volume diffusion of metal cations or oxygen ions by the layers of solid reaction products occurs, since there is no mutual solubility between initial oxide and its reduction products. Surface diffusion plays an important part in this process. It

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Reduction of copper ferrite $CuFeO_2$ ... S/020/61/139/005/012/021
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leads to a growth of copper and magnetite crystals on the surface of ferrite particles during reduction. In the fine powder used by the authors, ferrite was transformed to magnetite and copper sooner than magnetite reduction began. There are 1 figure and 6 references: 3 Soviet-bloc and 3 non-Soviet-bloc. The three references to English-language publications read as follows: A. Pabst, Am. Min., 31, 539 (1946); C. Delorme, F. Bertaut, J. Phys. Rad., 14, 129 (1953); W. Foller, A. J. Thompson, Phys. Rev., 47, 644 (1935);

ASSOCIATION: Institut metallurgii Ural'skogo filiala Akademii nauk SSSR (Institute of Metallurgy of the Ural Branch of the Academy of Sciences USSR)

SUBMITTED: April 21, 1961

Card 3/5

STAFEYEVA, N.M.; BOGOSLOVSKIY, V.N.; SHCHEPETKIN, A.A.; ZHURAVLEVA, M.G.; CHUFAROV, G.I.

Equilibrium conditions in the reduction of copper ferrite $CuFe_2O_4$ by hydrogen. Dokl. AN SSSR 146 no.4:874-876 O '62. (MIRA 15:11)

1. Institut metallurgii Ural'skogo filiala AN SSSR.
2. Chlen-korrespondent AN SSSR (for Chufarov).

(Copper ferrate)
(Hydrogen)

BOGOSLOVSKIY, V.N., kand.tekhn.nauk

New method of computing the resistance of exterior elements to heat exchange by calculating R_o^{tr}. Vod. i san. tekh. no.1:15-20 Ja '63. (MIRA 16:2)
(Buildings—Thermal properties)

LEONT'YEV, L.I.; BOGOSLOVSKIY, V.N.; CHUFAROV, G.I.

Problem of the existence of solid solutions between mono- and dicalcium ferrites. Zhur.neorg.khim. 8 no.1:257-258 Ja '63. (MIRA 16:5)

1. Institut metallurgii Ural'skogo filiala AN SSSR.
(Calcium ferrates) (Solutions, Solid)

L 12902-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD

ACCESSION NR: AP3003555 S/0020/63/151/002/0347/0349

AUTHORS: Stafeyeva, N. M.; Shchepetkin, A. A.; Bogoslovskiy, V.N.; Zhuravleva, M.I.; Chufarov, G.I. (Corr. member, Academy of Sciences SSSR)

TITLE: Study of equilibrium condition during hydrogen reduction of ferrite Mg sub 0.5 Mn sub 0.5 Fe sub 2 O sub 4

SOURCE: AN SSSR. Doklady, v. 151, no. 2, 1963, 347-349

TOPIC TAGS: equilibrium conditions, hydrogen, hydrogen reduction, ferrite, magnesium ferrite, manganese ferrite, solid phase, lattice, X-ray analysis

ABSTRACT: Reduction of ferrite $Mg_{.5}Mn_{.5}Fe_2O_4$ was studied under equilibrium conditions at 800, 900 and 1000 degrees C. Partial pressure of oxygen during dissociation of the ferrite was calculated. Composition of solid phases existing during the various reduction stages was determined. Ferrite $Mg_{.5}Mn_{.5}Fe_2O_4$ is a solid solution of magnesium and manganese ferrites with a 1:1 molar ratio. The original sample was obtained by heating a mixture of the required

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amounts of MgO, MnO and Fe_2O_5 in CO_2 atmosphere at 1200 degrees for 30 hours. Reduction was carried out in a closed evacuated system through which a mixture of hydrogen and water vapor was circulated until equilibrium was reached. Water vapor was maintained at a pressure equal to that of saturated water vapor at 0 degrees C. Partial pressure of hydrogen in the gaseous equilibrium mixture was determined after freezing out the water vapor in a trap immersed in liquid nitrogen. Partial pressure of oxygen was determined from the values $K = \frac{P_{H_2O}}{P_{H_2}}$. Extent of reduction was determined from the hydrogen consumption. A reduction of 100% was assumed for an oxide having the conposition Mg sub .5Mn sub .5O. Solid phases existing at equilibrium were subjected to X-ray analysis (Debye method and with a camera with a 57.3mm diameter). Photographs were taken under FeK illumination using a manganese filter. Relationships between partial pressure of oxygen at equilibrium and the extent of reduction of the ferrite Mg sub .5Mn sub .5Fe_2O_4 at 800, 900 and 1000 degrees C are presented. Relationships between the size of lattices

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in the three solid phases and the extent of reduction, as well as relationships between the concentration of the various phases and the extent of ferrite reduction are given. Orig. art. has: 3 figures.

ASSOCIATION: Institut metallurgii Ural'skogo filiala Akademii nauk SSSR, Sverdlovsk (Metallurgical Institute, Ural branch, Academy of Sciences, SSSR)

SUBMITTED: 01Apr63 DATE ACQ: 30Jul63 ENCL: 00

SUB CODE: CH NO REF SOV: 004 OTHER: 006

Card 3/3

SHCHEPETKIN, A.A.; KHROMYKH, L.G.; BOGOSLOVSKIY, V.N.; ZHURAVLEVA, M.G.; CHUFAROV, G.I.

Equilibrium conditions during the reduction of magnesium ferrite by hydrogen. Dokl. AN SSSR 152 no.1:124-126 S '63. (MIRA 16:9)

1. Institut metallurgii Ural'skogo filiala AN SSSR. 2. Chlen-korrespondent AN SSSR (for Chufarov).
(Magnesium ferrates) (Reduction, Chemical)

BOGOSLOVSKIY, V.N., kand. tekhn. nauk

Determining the heat loss of space through outer enclosures.
Vod. i san. tekh. no.3:14-17 '64 (MIRA 18:2)

ACCESSION NR: AP4039618 S/0076/64/038/005/1135/1141

AUTHOR: Shchepetkin, A. A. (Sverdlovsk); Stafeyeva, N. M. (Sverdlovsk); Bogoslovskiy, V. N. (Sverdlovsk); Zhuravlova, M. G. (Sverdlovsk); Chufarov, G. I. (Sverdlovsk)

TITLE: Study of equilibrium conditions during the reduction of magnesium-manganese ferrites

SOURCE: Zhurnal fizicheskiy khimii, v. 38, no. 5, 1964, 1135-1141

TOPIC TAGS: magnesium-magnetite ferrite, ferrite dissociation, ferrite reduction, equilibrium oxygen pressure, ferrite crystalline structure, spinel phase, magnesioferrite, magnetite

ABSTRACT: The equilibrium oxygen pressure during the dissociation of magnesium-manganese ferrites (I) of the composition $Mg_cMn_{1-c}Fe_2O_4$ (c = 0.1 to 1.0) have been determined and some peculiarities of the crystalline structure of I of various compositions have been studied. This work was done because such data are helpful for the preparation of ferrites and the understanding of changes occurring in service. The equilibrium conditions in the reduction of I were determined in a closed vacuum apparatus with a circulating $H_2 + H_2O$ mixture. The equilibrium

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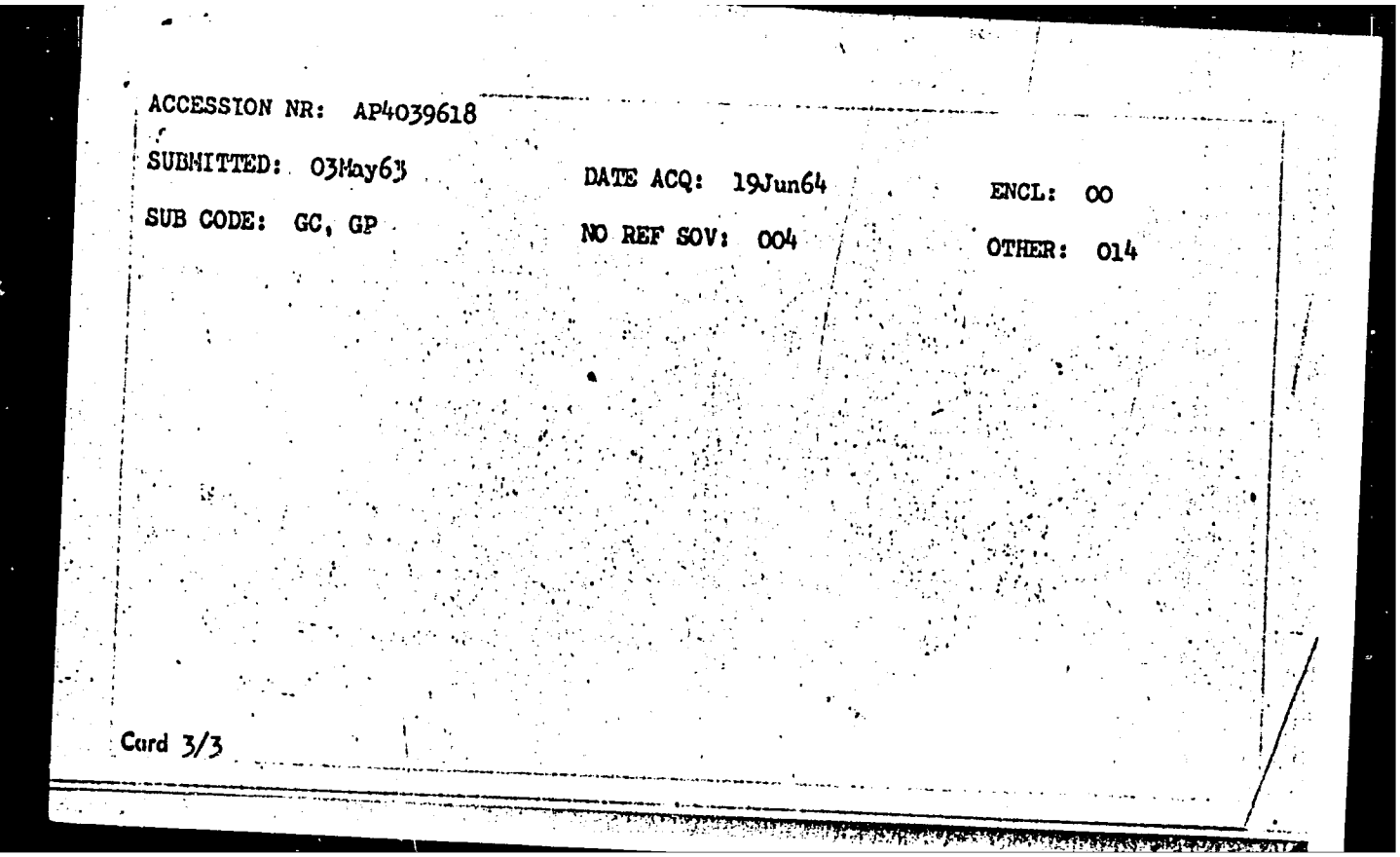
ACCESSION NR: AP4039618

oxygen pressure was calculated from the formula $p_{O_2}^{1/2} = K_p K_{H_2O}$, where K_p is the H_2O/H_2 pressure ratio in an equilibrium gas mixture and K_{H_2O} is the equilibrium constant of the water vapor dissociation. X-ray analysis of I and of their reduction products was carried out by the Debye method. It was shown that the oxygen pressure remains almost constant (10^{-13} atm) with an increase of the magnesioferrite content in the solid solution from 0 to 50 mol. %; the pressure increased sharply (to 10^{-11} atm) with an increase of the magnesioferrite content from 50 to 100 mol. %. The oxygen pressure dropped sharply in the course of the reduction of I by hydrogen. X-ray analysis of the solid phases formed during the reduction revealed a correlation between the oxygen pressure and the chemical characteristics of the crystals (magnesium ion fraction in the tetrahedral lattice nodes) of I. It was shown, in particular, that during the reduction the equilibrium oxygen pressure drops with a decrease in the magnesioferrite content and an increase in the magnetite content in the spinel phase and approaches, at 33% reduction, the dissociation pressure of magnetite. Orig. art. has 7 figures.

ASSOCIATION: Institut metallurgii Ural'skogo filiala AN SSSR (Institute of Metallurgy, Ural Branch, AN SSSR)

Card 2/3



ACCESSION NR: AP4039618

SUBMITTED: 03May63 DATE ACQ: 19Jun64 ENCL: 00

SUB CODE: GC, GP NO REF SOV: 004 OTHER: 014

Card 3/3

MEN', A.N.; STAFEYEVA, N.M.; BOGOSLOVSKIY, V.N.; ZHURAVLEVA, M.G.; CHUFAROV, G.I.

Thermodynamic analysis of equilibrium in the dissociation of ferrites. Dokl. AN SSSR 156 no. 4:912-915 Je '64. (MIRA 17:6)

1. Institut metallurgii, Sverdlovsk. 2. Chlen-korrespondent AN SSSR (for Chufarov).

L 22897-65 EED-2/EWT(1)/EWT(m)/EWP(b)/EWP(t) IJP(c) JD
ACCESSION NR: AP5001240 S/0126/64/018/005/0711/0716

AUTHOR: Bogoslovskiy, V.N.; Shchepetkin, A.A.; Startseva, I.Ye.; Antonov, V.K.; Chufarov, G.I.; Shur, Ya. S.

TITLE: Effect of the phase composition on the magnetic properties of magnesium-manganese-iron ferrite with a rectangular hysteresis loop

SOURCE: Fizika metallov i metallovedeniye, v. 18, no. 5, 1964, 711-716

TOPIC TAGS: ferrite magnetic property, magnesium ferrite, manganese ferrite, spinel solid solution, hysteresis loop

ABSTRACT: The object of this work was to find out whether the rectangularity of the hysteresis loop of Mg-Mn ferrites is related only to the presence of vacancies, or whether trivalent manganese ions also play a major part in this phenomenon. An Mg-Mn-Fe ferrite obtained from a mixture of 34 mol. % MgO, 8.5% MnO (in the form of $MnCO_3$) and 57.5% Fe_2O_3 and having a relatively high rectangularity coefficient of the hysteresis loop was investigated. X-ray diffraction was used to determine the concentration of the components of the spinel solid solutions, the magnetic characteristics were measured by the ballistic method, and changes in the composition of the solid solutions

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L 22897-65
ACCESSION NR: AP5001240

were induced by annealing the samples under various conditions. It was found that the increase or decrease in the rectangularity coefficient of the hysteresis loop is due primarily to the formation and disappearance of Mn^{3+} ions, although there is a simultaneous change in the concentration of vacancies in the spinel solid solution. Samples containing an appreciable quantity of vacancies but no Mn^{3+} ions have a rectangularity coefficient of less than 0.5. The authors conclude that the rectangular shape of the hysteresis loop of Mg-Mn-Fe ferrites obtained from a mixture containing over 50 mol. % Fe_2O_3 is due to the presence of Mn^{3+} ions which cause local distortions of the crystal structure of the spinel solid solution. Orig. art. has: 1 table, 1 figure, and 7 formulas.

ASSOCIATION: Institut metallurgii, Sverdlovsk (Metallurgical Institute); Institut fiziki metallov AN SSSR (Institute of the Physics of Metals, AN SSSR)

SUBMITTED: 02Nov63 ENCL: 00 SUB CODE: MM, EM

NO REF SOV: 007 OTHER: 010

Card 2/2

MEN', A.N.; STAFEYEVA, N.M.; BOGOSLOVSKIY, V.N.; ZHURAVLEVA, M.G.; CHUFAROV, G.I.

Determination of the concentration dependence of some thermodynamic functions of solid ferrite solutions. Dokl. AN SSSR 157 no.6:1441-1444 Ag '64. (MIRA 17:9)

1. Institut metallurgii, Sverdlovsk. 2. Chlen-korrespondent AN SSSR (for Chufarov).

BOGOSLOVSKIY, V.N.

Moisture potential. Inzh.-fiz. zhur. 8 no.2:216-222 F '65.
(MIRA 18:5)

1. Inzhenerno-stroitel'nyy institut imeni Kuybysheva, Moskva.

BOGOSLOVSKIY, V.N.; MEN', A.N.; CHUFAROV, G.I.

Thermodynamic analysis of equilibrium in the dissociation of ferrites. Dokl. AN SSSR 163 no.3:671-673 Jl '65. (MIRA 18:7)

1. Institut metallurgii, Sverdlovsk. 2. Chlen-korrespondent AN SSSR (for Chufarov).

KAMENEV, P.N., doktor tekhn. nauk; BOGOSLOVSKIY, V.N., kand. tekhn. nauk, dots.; YEGIAZAROV, A.G., kand. tekhn. nauk, dots.; SKANAVI, A.N., kand. tekhn. nauk, dots.; CHERNYSHOV, V.F., kand. tekhn. nauk, dots.; STAROVEROV, I., nauchn. red.

[Heating and ventilation] Otoplenie i ventiliatsiia. Moskva, Stroiizdat. Pt.1. 1965. 379 p. (MIRA 18:3)

VOROB'YEV, Yu.P.; BOGOSLOVSKIY, V.N.; BOGACHOVA, Ye.G.; CHUFAROV, G.I.

Reduction of $FeV_{0,6}Fe_{1,4}O_4$ solid solution under equilibrium conditions. Dokl. AN SSSR 166 no.3:664-667 Ja '66.
(MIRA 19:1)

1. Institut metallurgii, Sverdlovsk. 2. Chlen-korrespondent AN SSSR (for Chufarov). Submitted June 29, 1965.

BOGOYAVLENSKIY, Yu.K.

Fine morphological and histochemical structure of muscle cells in some ascarids. Trudy Gel'm. lab. 15:38-44 '65 (MIRA 19:1)

Comparative histological and histochemical study of the cuticle and hypoderm of Trichocephalata. Ibid.:45-54

BOGOYAVLENSKIY, Yu.K.; DRYNOCHKINA, Z.V.

Comparative histochemical study of DNA in the tissues of the musculocutaneous sac in some parasitic nematodes. Trudy Gel'm. lab. 15:55-59 '65 (MIRA 19:1)

BOGOYAVLENSKIY, Yu.K.; KOROLEVA, N.A.

Analysis of the histological structure of the musculocutaneous sac of Ascaridia galli in the process of ontogeny (preimaginal stage). Trudy Gel'm. lab. 15:60-63 '65 (MIRA 19:1)

USSR/ Chemistry - Reduction

Card 1/1 Pub. 22 - 28/47

Authors : Arkharov, V. I.; Bogoslavskiy, V. N.; Zhuravleva, M. G.; and Chufarov, G. I., Memb. Corresp. of Acad. of Sc. USSR

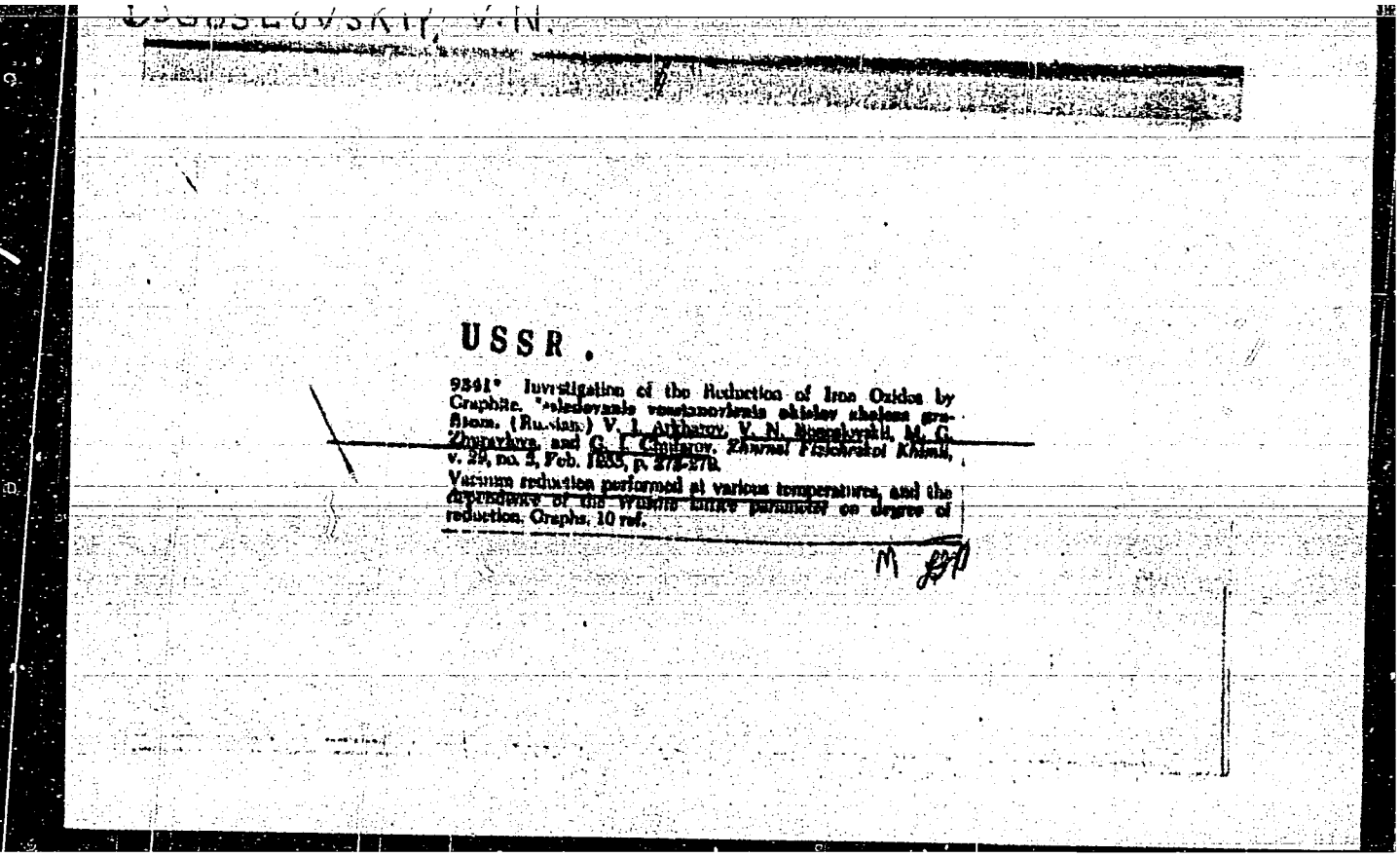
Title : Reduction of ferric oxides with graphite

Periodical : Dok. AN SSSR 98/5, 803-806, Oct 11, 1954

Abstract : The reduction of Fe_2O_3 with graphite at temperatures of 1000 - 1150° in vacuo was investigated. The gaseous reaction products were continuously removed through a trap cooled with liquid air for the purpose of collecting the CO_2. The amount of carbon monoxide (CO) formed during the reduction process was determined by the difference between loss in weight and amount of CO_2 lost through freezing. Data regarding rate of reduction and apparent activation energy values are presented. Results of x-ray analysis of the solid reduction products are shown in table. Seven references: 6-USSR and 1-German (1925-1945). Table; graph.

Institution : Acad. of Sc. USSR, Ural Branch, Institute of Chemistry and Metallurgy

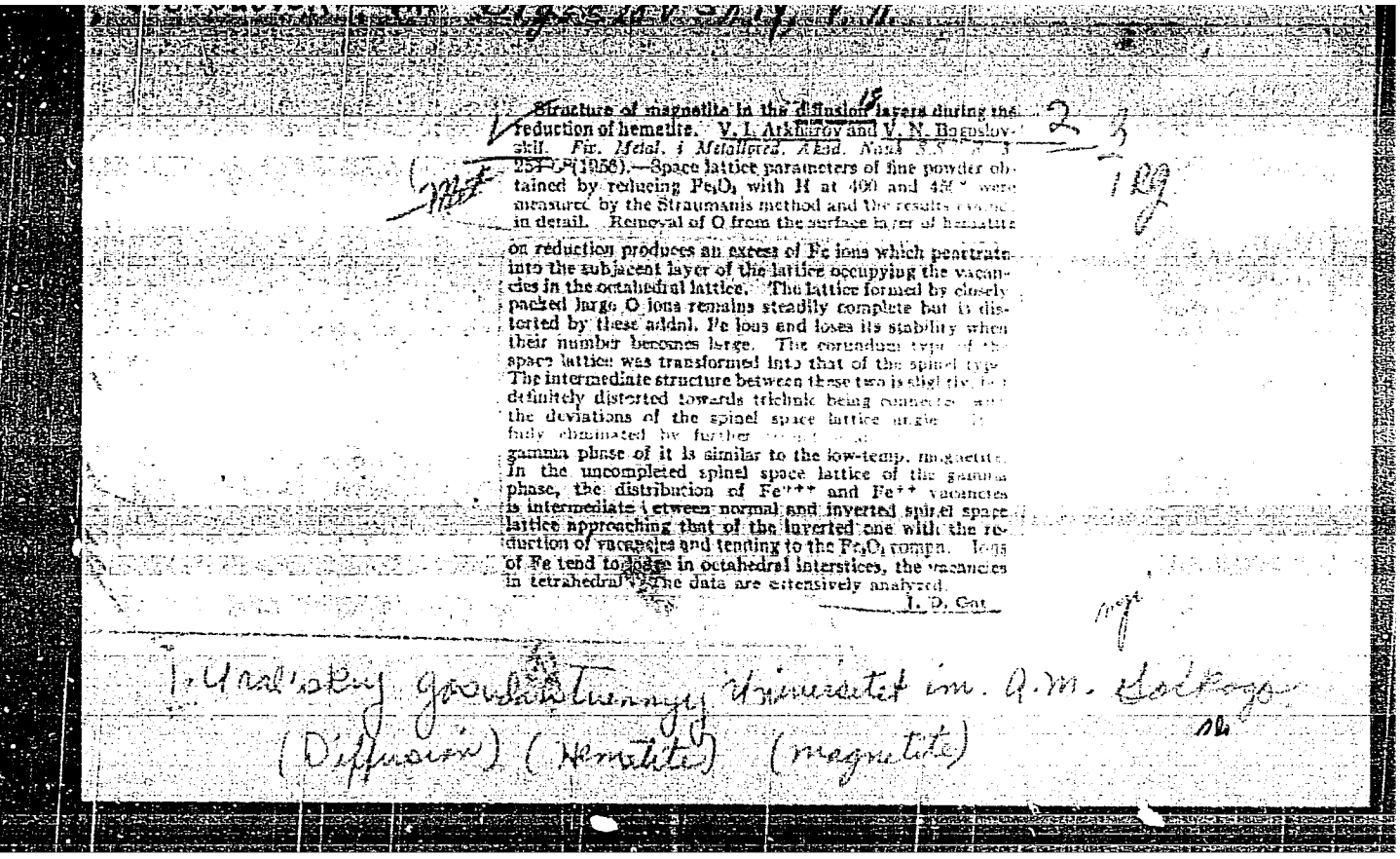
Submitted : March 31, 1954



USSR .

9541* Investigation of the Reduction of Iron Oxides by Graphite. "Issledovaniye vosstanovleniya okislov zheleza grafitom. (Russian.) V. I. Arkhatov, V. N. Nikolayevskii, M. G. Zhmayeva, and G. I. Chufarov. *Zhurnal Fizicheskoi Khimii*, v. 29, no. 2, Feb. 1955, p. 278-278.

Vacuum reduction performed at various temperatures, and the dependence of the weight loss parameter on degree of reduction. Graphs. 10 ref.



Structure of magnetite in the diffusion layers during the reduction of hematite. V. I. Arkharov and V. N. Bogoslovskii. *Fiz. Metal. i Metallored. Akad. Nauk S.S.S.R.* 3 257–8 (1956).—Space lattice parameters of fine powder obtained by reducing Fe_2O_3 with H at 400 and 450° were measured by the Straumanis method and the results [illegible] in detail. Removal of O from the surface layer of hematite on reduction produces an excess of Fe ions which penetrate into the subjacent layer of the lattice occupying the vacancies in the octahedral lattice. The lattice formed by closely packed large O ions remains steadily complete but is distorted by these addnl. Fe ions and loses its stability when their number becomes large. The corundum type of the space lattice was transformed into that of the spinel type. The intermediate structure between these two is slightly but definitely distorted towards triclinic being connected with the deviations of the spinel space lattice angles [illegible] fully eliminated by further [illegible] gamma phase of it is similar to the low-temp. magnetite. In the uncompleted spinel space lattice of the gamma phase, the distribution of Fe^{+++} and Fe^{++} vacancies is intermediate between normal and inverted spinel space lattice approaching that of the inverted one with the reduction of vacancies and tending to the Fe_3O_4 compn. Ions of Fe tend to occupy in octahedral interstices, the vacancies in tetrahedral. The data are extensively analyzed.

L. D. Gat

I. Kharkov gosudarstvennyi universitet im. A. M. Gorkogo

(Diffusion) (Hematite) (magnetite)

CHUFAROV, G.I.; TATIYEVSKAYA, Ye.P.; ZHURAVLEVA, M.G.; AVERBUKH, B.D.; LISNYAK, S.S.; ANTONOV, V.K.; BOGOSLOVSKIY, V.N.; STAFEYEVA, N.M.

Kinetics and mechanism of the reduction of metal oxides and chemical compounds. Trudy Inst. met. UFAN SSSR no.2:9-40 '58.
(MIRA 12:4)

(Oxidation-reduction reaction) (Metallurgy)

5(2)

AUTHORS: Bogoslovskiy, V. N., Zhuravleva, M. G., Chufarov, G. I., Corresponding Member, Academy of Sciences, USSR

SOV/20-123-1-22/56

TITLE: On the Reduction of Nickel Ferrite by Graphite (O vosstanovlenii ferrita nikelya grafitom)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 1, pp 87 - 89 (USSR)

ABSTRACT: The mechanism of crystallochemical transformations in the reduction of metal oxides by graphite has been intensely studied on iron oxides (Ref 1). But in the reduction of complicated compounds, in the crystal lattice of which atoms of various metals are occurring, essential deviations might be expected. Ferrites of the type $Me^{2+}Fe_2^{3+}O_4$ and such with a spinel structure are worth to be thoroughly investigated as they represent a valuable material in the production and use of semiconductors. The nickel ferrite investigated was produced by sintering of an equimolar mixture of Fe_2O_3 and NiO for 30 hours at 1200°. As reducing

agent, graphite from Acheson electrodes was used which was annealed in the vacuum at 1100°. Ferrite was carefully powdered with graphite and then subjected to reduction. The amount of graphite was three times the quantity theoretically required for a complete reduction, the annealing was performed in the air, but the gaseous reaction products were always pumped off and CO_2 was gathered in a trap dipped into liquid nitrogen, and periodically determined. Table 1 shows the variation of the rate of the reduction process of nickel ferrite at 950° in dependence upon the oxygen amount withdrawn. Initially, up to 20% of this amount, the rate is somewhat reduced. After the withdrawal of 45-50 % oxygen the rate of reduction considerably increases and reaches the maximum at 80%. This kind of kinetics points to the essential role of the crystallochemical transformations during the reduction. The X-ray investigation of the solid products of reduction showed that they consist at the beginning (up to 20%) of nearly pure metallic nickel. Its lattice parameter is

3,517 - 3,520 Å. Later, the parameter of the lattice of the metallic phase increases, which enlightens the increasing iron content in the nickel. The dependence of the mentioned lattice parameter of the metallic phase upon the oxygen content in the solid phase is given in figure 2. The parameter is maintained on further reduction up to 50% of the reduction and then increases again. The maximum of 3,581 Å is reached at 70%. The reduction mechanism of nickel ferrite by graphite in vacuo is determined both by the ion diffusion in the surface layer and by the steric ion diffusion in the depth of the crystal lattice. This mechanism differs from the reduction by gases (f.i.by hydrogen at 400°), in which the steric diffusion is without importance and where the lattice transformation is mainly achieved by the superficial ion diffusion. There are 3 figures and 2 references, 1 of which is Soviet.

ASSOCIATION: Institut metallurgii Ural'skogo filiala Akademii nauk SSSR (Institute of Metallurgy of the Ural Branch of the Academy of Sciences, USSR)

BOGOSLOVSKIY, V. N. Cand Phys-Math Sci -- (diss) "Crystallochemical mechanism of the reduction of ferric oxides." Sverdlovsk, 1959. 9 pp including cover (Min of Higher and Secondary Specialized Education USSR. Ural State Univ im A. M. Gor'kiy), 120 copies (KL, 49-59, 137)

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SOV/126-8-5-17/29

AUTHORS: Stafeyeva, N.M., Bogoslovskiy, V.N., Chufarov, G.I., and Subbotina, V.A.

TITLE: Reduction of Copper Ferrite with Graphite

PERIODICAL: Fizika metallov i metallovedeniye, Vol 8, 1959, Nr 5, pp 740-746 (USSR)

ABSTRACT: The authors describe their investigation of the kinetics and mechanism of the reduction of the tetragonal and cubic forms of copper ferrite $CuFe_2O_4$ with graphite in vacuum. The graphite powder was prepared by grinding Acheson electrodes and calcination at 1200 °C without air and in a vacuum at 1000 °C. The ferrite was obtained from a mixture of the composition $CuO.Fe_2O_3$ by heating in air at 1000 °C for 30 hours. By cooling rapidly in water the cubic form was obtained; holding at 700 °C and cooling slowly gave the tetragonal form. For the reduction a previously described (Ref 6) apparatus with a quartz spring balance was used, the sample weight being 0.5 g ferrite and 0.15 g graphite. Preliminary degassing of the thoroughly mixed sample was effected at 300 °C and 10^{-5} mm Hg. The weight-loss was determined together with the corresponding weight of

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Reduction of Copper Ferrite with Graphite

carbon dioxide evolved (trapped in a low-temperature trap) and from the difference the weight of carbon monoxide was calculated. The solid reaction products were studied by X-ray diffraction, the lattice parameters being determined by graphical extrapolation. Fig 1 shows rates of reduction as functions of degree of reduction at 650, 700, 750, 800, 900 and 1000 °C for tetragonal ferrite; Fig 2 shows the curve for 900 °C. The corresponding curves for the tetragonal and cubic ferrites are compared in Fig 3. Fig 4 shows degrees of reduction as functions of time for the tetragonal form at 800 and 900 °C, and Fig 5 the lattice parameter of this ferrite with respect to reduction temperature. For both forms the reduction occurs in a stepwise manner: $CuFe_2O_4 \rightarrow Cu + Fe_3O_4$; $Fe_3O_4 \rightarrow FeO$; $FeO \rightarrow Fe$. At 650, 700, 750, and 800 °C only the first stage occurs, at 900 °C and over all three. The reduction rates of the first and third stages show a maximum. By reducing the tetragonal form above the transformation temperature a solid solution of iron in copper is obtained, this being associated with the simultaneously occurring process of the transformation

Reduction of Copper Ferrite with Graphite

of the tetragonal copper-ferrite lattice into the cubic. The authors suggest the following reduction mechanism. As oxygen is removed from the ferrite surface an excess of iron and copper ions is produced. Copper being less firmly attached to oxygen forms a metallic phase, while the iron diffuses into the ferrite particle, displacing copper. Part of the trivalent iron ions are reduced to the bivalent form, the ferrite lattice then approximating to that of magnetite. After all the ferrite has been converted to magnetite the reduction of the latter begins, which proceeds as described by Arkharov, Bogoslovskiy, Zhuravleva and Chufarov (Ref 7).

Card 3/3 There are 5 figures, 1 table and 7 references, of which 3 are Soviet, 2 French, 1 English and 1 Acta Crystallographica.

ASSOCIATION: Institut metallurgii UFAN SSSR (Institute of Metallurgy, Ural Branch of Acad.Sci. USSR)

SUBMITTED: March 18, 1959

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67662
SOV/126-8-6-9/24

AUTHOR: Bogoslovskiy, V.N.

TITLE: X-Ray Investigation of the Reduction Processes of Certain Ferrites

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 6, pp 857-860 (USSR)

ABSTRACT: In this report the results of investigations of the solid products of reduction of nickel ferrite by hydrogen at 400°C and of nickel and copper ferrites by graphite have been used. The reduction of ferrites by graphite was carried out in vacuum. The phase composition and lattice parameters of the reduction products were studied at various stages in the process. Ferrite, made by sintering an equimolar mixture in air at 1200°C for 30 hours, was used as the material for nickel ferrite reduction. An X-ray phase analysis has shown that the sintering products are one-phased and have the structure of a spinel with a crystal lattice parameter of 8.333 ± 0.005 Å, which agrees with literature data on nickel ferrite, $NiFe_2O_4$ (Ref 3). Fig 1 shows the change in lattice parameter of nickel ferrite during reduction with graphite at 950°C (1 - experimental results; 2 - calculated results). Fig 2

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X-Ray Investigation of the Reduction Processes of Certain Ferrites

shows the change in lattice parameter of the metallic phase during reduction of nickel ferrite with graphite at 950°C. The composition of the solid products of nickel ferrite reduction by hydrogen at 400°C differs considerably from that obtained by graphite reduction. There are no noticeable changes in the crystal lattice parameter of ferrite during the entire reduction process. The composition of the metallic phase also remains unchanged and corresponds to that of the metal ions in ferrite. The reduction of copper ferrite ($CuFe_2O_4$) by graphite has many features in common with the reduction of nickel ferrite under the same conditions. The product of copper ferrite reduction at temperatures of 700 to 900°C at the beginning of the process is copper. The results obtained enable the role of volume and surface diffusion in the reduction of complex oxides to be assessed. They also give qualitative information of the relative magnitude of the bonding forces between nickel and copper ions on the one hand and oxygen on the other, as compared with the bonding forces between oxygen ions and iron in ferrite.

67662
SOV/126-8-6-9/24

X-Ray Investigation of the Reduction Processes of Certain Ferrites

There are 2 figures and 7 references, 3 of which are Soviet, 2 English, 1 German and 1 Dutch.

ASSOCIATION: Institut metallurgii UFAN SSSR (Institute of Metallurgy, UFAN, USSR)

SUBMITTED: July 25, 1959

Card 3/3

SOV/80-32-5-41/52

5(2)

AUTHORS: Zhuravleva, M.G., Bogoslovskiy, V.N., Chufarov, G.I.

TITLE: The Reduction of Nickel and Cobalt Ferrites by Hydrogen

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 5, pp 1159-1161 (USSR)

ABSTRACT: Ferrites are complex oxides of the formula MFe_2O_4, where M is a bivalent metal ion. The ferrite formation of the mixtures $NiO + Fe_2O_3$ and $CoO + Fe_2O_3$ starts at 700 - 800°C. At 1,100°C the reaction proceeds very intensively. After calcination for 30 hours, cobalt ferrites have a crystal lattice of 8.376 ± 0.003Å, nickel ferrites of 8.333 ± 0.005 Å. The reduction by hydrogen was carried out in a closed apparatus at 300 - 500°C and 200 mm Hg. The ferrites are reduced as chemical compounds without preliminary decomposition to oxides. The final product is a solid solution of metals.
There are 3 graphs and 5 Soviet references.

Card 1/2

The Reduction of Nickel and Cobalt Ferrites by Hydrogen SOV/80-32-5-41/52

ASSOCIATION: Sverdlovskiy institut metallurgii ural'skogo filiala AN SSSR (Sverdlovsk Institute of Metallurgy of the Ural Branch of the AS USSR)

SUBMITTED: May 9, 1958

Card 2/2

5 (1)

AUTHORS: Zhuravleva, M. G., Bogoslovskiy, V. N., SOV/20-126-3-46/69
Chufarov, G. I., Corresponding Member AS USSR

TITLE: The Effect of Potassium and Sodium Carbonates on the Reduction of Nickel and Cobalt Ferrites by Graphite
(Vliyaniye uglekislykh soley kaliya i natriya na vosstanovleniye ferritov nikelya i kobal'ta grafitom)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 3, pp 623-625 (USSR)

ABSTRACT: The authors used "achesonovskiy" [Abstracter's Note: Acheson's ?] graphite which was vacuum-annealed at 1100° as a reducing agent for the ferrites mentioned in the title. Its quantity was in every test 3 times the quantity necessary for reduction to the metal. The admixtures of the two carbonates amounted to 1 % of the ferrite weight. A vacuum in the order of magnitude of 10^{-3} mm mercury column was maintained in the reaction area. Figure 1 represents graphically the test results which show that the mentioned salts speed up the reduction referred to: K_2CO_3 by 100 fold for nickel ferrite, and by several dozens for cobalt ferrite. The efficiency of Na_2CO_3

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is much lower (Figs 1a and 1b). The influence of the admixtures is not restricted to a simple acceleration - they also may change the character of the process (Ref 3). X-ray structure investigations of the solid phase have shown that, in the nickel reduction by graphite, metallic nickel is formed in the first stage, while the initial ferrite approaches the magnetite. In further reduction, the metallic phase is enriched by iron (Fig 2). The authors carried out an X-ray structure analysis of the solid products of a nickel-ferrite reduction by graphite with an addition of 1% K_2CO_3. It was found that in this case the reduction product is a solid solution Ni-Fe with a variable concentration. The phase with a lattice of the spinel type, i.e. ferrite, is present until the 71 % reduction is finished. At a 51 % reduction, a phase with a lattice of the NaCl type appears for the first time. It corresponds to the solid solutions $Fe_{1-x}Ni_xO$. Figure 2, however, shows that the lattice parameter is higher at the reduction with admixtures. This points to a higher iron content, and proves that the rate of spatial diffusion of the ions in

the solid phase is inferior to the rate of oxygen extraction by the reducing substance. In the case of graphite, it is the gaseous carbon oxide. The present experimental material renders possible some suppositions on the possible mechanism of influence of the mentioned admixtures (Refs 3, 5, 6). Their introduction changes the reactivity of the oxides and ferrites, i.e. it changes the rate of the process. There are 2 figures and 7 Soviet references.

ASSOCIATION: Institut metallurgii Ural'skogo filiala Akad[illegible]ii nauk SSSR (Institute of Metallurgy of the Ural Branch of the Academy of Sciences, USSR)

SUBMITTED: March 16, 1959

66427

~~5 (2)~~ 18.7110, 15.2000

AUTHORS: Stafeyeva, N. M., Bogoslovskiy, V. N., Chufarov, G. I., Corresponding Member AS USSR, Subbotina, V. A. SOV/20-128-6-32/63

TITLE: Reduction of Copper Ferrite by Graphite

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 6, pp 1210 - 1213 (USSR)

ABSTRACT: The authors investigated the kinetics and mechanism of the reduction of tetragonal and cubical copper ferrite in the vacuum. The graphite used for this purpose was prepared from pulverized Acheson electrodes by roasting at 1200° without access of air, then at 1000° in the vacuum. The ferrite was annealed in the air in a mixture of $CuO \cdot Fe_2O_3$ at 1000° for 30 hours. The products of sintering were exposed for 3 hours at 700° for obtaining a product with tetragonal lattice, and cooled down together with the furnace. The cubical form was obtained by quenching in water directly after annealing. The ferrite quantity weighed was carefully pulverized with graphite. The experiments were made in a vacuum apparatus (Ref 6). The reduction was carried out both below the point of transformation (760°) of tetragonal ferrite

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into the cubical form (spinel), i.e. at 650, 700 and 750°, and above this point (800, 900, 1000°). Figures 1 and 2 show the curves of reduction of tetragonal ferrite. Below 900°, a low-percentage reduction (11,18,24 and 35%, respectively) was attained. At 900 and 1000°, the sample was reduced with 100%. The initial stage of reduction exhibits the highest reaction rate. Then it falls rapidly, and is very low at a reduction of 40-50%. Above 50%, the reaction is again accelerated (Fig 2, right-hand side). Figure 3 compares kinetic curves representing the dependence of the reduction rate of tetragonal and cubical ferrite on the reduction degree at 700, 800 and 1000°. This shows that the reduction rate of cubical ferrite, at equal temperatures, is lower than that of tetragonal ferrite. Besides, there is no maximum rate in the 1st stage, in the case of cubical ferrite. At the beginning, the gaseous reaction products consist of CO and CO_2-mixture (60-65% CO_2). After a 70% reduction, they consist of almost pure CO. Subsequently, the roentgenogram of the solid reaction products is discussed, and a presumable mechanism of the crystal-chemical transformation during the reduction of the two forms is suggested: $CuFe_2O_4 \rightarrow Cu + Fe_3O_4$; $Fe_3O_4 \rightarrow FeO$;

4

66427

Reduction of Copper Ferrite by Graphite SOV/20-128-6-32/63

FeO → Fe. The reconstruction of the lattice of tetragonal ferrite into cubical ferrite proceeds simultaneously with the reduction process, and influences the peculiarities of the latter. There are 3 figures and 7 references, 3 of which are Soviet.

ASSOCIATION: Institut metallurgii Ural'skogo filiala Akademii nauk SSSR (Institute of Metallurgy of the Ural Branch of the Academy of Sciences, USSR)

SUBMITTED: June 22, 1959

Card 3/3

BOGOSLOVSKIY, V.N.; SHCHEPETKIN, A.A.

X-ray determination of oxygen parameters in spinel structure ferrates. Fiz.met.i metalloved. 10 no.1:24-28 Jl '60. (MIRA 13:8)

1. Institut metallurgii Ural'skogo filiala AN SSSR.
(Ferrates--Testing) (X rays--Diffraction)

BOGOSLOVSKIY, V.N.

18.9100

81910

S/126/60/010/01/017/019
E073/E535

AUTHORS: Bogoslovskiy, V.N. and Shabalina, O.K.

TITLE: Electron Microfractography as Applied to Ferrites

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.1, pp.153-156

TEXT: Study of the microstructure of ferrites is of theoretical and practical interest since the initial permeability, the degree to which the hysteresis loop is rectangular, the electric resistance and other properties depend strongly on the microinhomogeneities and the defects. Analysis of fractures by means of an electron microscope is particularly useful for revealing submicroscopic structure details. The authors of this paper used a two-stage polystyrene-carbon technique, since the chemical passivity and the relief of the specimens made it difficult to use a single-stage method. Fractures were investigated along the primary and secondary cleavage planes of natural single crystals of magnetite, artificial single crystals of some ferrites and fractures of polycrystalline ferrite components. Several micro-photos thus obtained are reproduced. The conclusions

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Electron Microfractography as Applied to Ferrites

are summarised thus:
1) Electron microfractography can be applied to single and polycrystalline ferrites. It is simpler and more convenient to utilise fractured specimens than polished ones.
2) On the cleavages of single crystals and on individual grains of polycrystalline specimens relief details and various defects can be observed.
3) In polycrystalline specimens defects due to imperfect sintering and porosity could be seen. It was also possible to evaluate the grain size.
4) Investigation of ferrites by means of electron microfractography enables detection of defects in technology and apparently will assist in establishing a relation between the properties and the microstructure of ferrites. There are 7 figures and 6 references, 5 of which are Soviet and 1 English.

ASSOCIATIONS: Institut metallurgii UFAN SSSR (Metallurgical Institute, Ural Branch, AS, USSR) and Ural'skiy politekhnicheskiy institut imeni S.M. Kirova (Ural Polytechnical Institute imeni S.M.Kirov)

Card 2/2
SUBMITTED: December 23, 1959

S/126/63/015/002/004/033
E039/E420

AUTHORS: Bogoslovskiy, V.N., Startseva, I.Ye., Zhuravleva, M.G., Shchepetkin, A.A., Chufarov, G.I., Shur, Ya.S.

TITLE: The effect of phase composition on the magnetic properties of magnesium-manganese ferrite with a rectangular hysteresis loop

PERIODICAL: Fizika metallov i metallovedeniye, v.15, no.2, 1963, 181-186

TEXT: A magnesium-manganese ferrite with a rectangular hysteresis loop and with a sufficiently simple composition was used to facilitate the interpretation of the results obtained. Toroidal samples 12 mm outer dia, 8 mm inner dia and 3 mm high were used. After a second annealing in air at 1200°C they were cooled in a CO_2 atmosphere. The composition was Fe_2O_3 - 42.8 mol%, MgO - 14.4%, MnO - 42.8% (as $MnCO_3$) which corresponds with the formula

$$(MgFe_2O_4)_{0.3}(MnFe_2O_4)_{0.6}(Mn_3O_4)_{0.1}$$

The dependence of the coercive force H_c, the residual

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The effect of phase ...

induction B_m, the maximum induction B_{max}, the induction in the field of 90 Oe B_{90}, and B_r/B_m on the pressure of oxygen when annealing at 600°C was investigated. B_r shows a steady decrease with increasing oxygen pressure up to 150 mm Hg, while for the other parameters there is little change for oxygen pressures above 50 mm. Maximum squareness of the hysteresis loop is obtained at 10 mm pressure of oxygen. A comparison of the results of physicochemical analysis, X-ray and magnetic investigation suggests that the spontaneous rectangularity of the hysteresis loop in this ferrite depends on the presence of the Mn^{3+} ion which leads to local distortions in the crystal lattice. There are 2 figures.

ASSOCIATIONS: Institut metallurgii UFAN SSSR
(Institute of Metallurgy UFAN USSR)
Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: August 10, 1962

Card 2/2

STAFEYEVA, N.M.; ZHURAVLEVA, M.G.; BOGOSLOVSKIY, V.N.; CHUFAROV, G.I.

Effect of Na_2CO_3 and K_2CO_3 additions on the reduction of oxides and copper ferrites. Zhur. neorg. khim. 9 no.2:447-450 F'64. (MIRA 17:2)

L 21064-65 EED-2/EWT(l)/EWT(m)/EWP(b)/T/EWP(t) AFWL/ESD/AEDC(a)/AS(mp)-2/ESD(dp) JD

ACCESSION NR: AP4044888 S/0020/64/157/006/1441/1444

AUTHOR: Men', A. N.; Stafeyeva, N. M.; Bogoslovskiy, V. N.; Zhuravleva, M. G. Chufarov, G. I. (Corresponding member AN SSSR)

TITLE: Concerning the determination of the concentration dependence of some thermodynamic functions of solid solutions of ferrites

SOURCE: AN SSSR. Doklady*, v. 157, no. 6, 1964, 1441-1444

TOPIC TAGS: thermodynamic function, solid solution, ferrite, concentration dependence, configurational mixture entropy

ABSTRACT: The statistical computation of thermodynamic functions of solid solutions is complicated because of the large number of parameters which characterize the interactions of particles in the solid phase. Therefore, reasonable approximations are needed which give a good agreement with the experiment. The simplest statistical approach is the computation of the configurational entropy of a mixture without consideration of the near order. The change of the configurational entropy $\Delta S^{cont.}$ for the solid solutions of copper ferrite at a given concen-

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ACCESSION NR: AP4044888

tration C with copper magnetite is given as a function of the equilibrium degree λ of inversion of solid solution at a given temperature and λ_c of the inversion of copper ferrite at the same temperature. If the function $\lambda(c)$ is not known, it can be assumed, in the first approximation, that $\lambda = \lambda_c$. For the calculation of ΔS^{cont}, the results of previous author's work (Fiz. tverd. tela, 4, 898 (1962)) are used. Orig. art. has: 3 figures and 12 equations

ASSOCIATION: Institut metallurgii Sverdlovsk (Institute of Metallurgy)

SUBMITTED: 20Apr64 ENCL: 00

SUB CODE: TD, MM NO REF SOV: 005 OTHER: 004

Card 2/2

SHCHEPETKIN, A.A.; STAFEYEVA, N.M.; BOGOSLOVSKIY, V.N.; ZHURAVLEVA, M.G.; CHUFAROV, G.I.

Equilibrium conditions in the reduction of magnesium-manganese ferrites. Zhur. fiz. khim. 38 no.5:1135-1141 My '64. (MIRA 18:12)

1. Institut metallurgii Ural'skogo filiala AN SSSR. Submitted May 3, 1963.

CHUFAROV, G.I.; LEONT'YEV, L.I.; SAPOZHNIKOVA, T.V.; BOGOSLOVSKIY, V.N.

Phase transitions during monocalcium ferrite reduction. Zhur. neorg. khim. 10 no.2:543-545 F '65. (MIRA 18:11)

1. Submitted July 6, 1964.